VASU SINGLA

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EDUCATION

University of Maryland, College Park *August 2021 - Present*
Ph.D. in Computer Science

University of Maryland, College Park *August 2019 - Present*
M.S in Computer Science GPA: 4.0/4.0

Punjab Engineering College, Chandigarh *July 2014 - June 2018*
Minors in Computer Science GPA: 9.4/10

Punjab Engineering College, Chandigarh *July 2014 - June 2018*
B. Engg, Production and Industrial. GPA: 8.2/10

PUBLICATIONS

- **Vasu Singla***, Songwei Ge*, David Jacobs, Ronen Basri. *Shift Invariance Can Reduce Adversarial Robustness* (Under Review)

- **Vasu Singla**, Sahil Singla, David Jacobs, Soheil Feizi. *Low Curvature Activations Reduce Overfitting in Adversarial Training* (Under Review)

- Rohun Tripathi*, **Vasu Singla*** , Bharat Singh, Mahyar Najibi, Abhishek Sharma, Larry Davis. *ASAP NMS - Accelerating Non-Maximum Suppression Using Spatially Aware Priors* (Under Review at CVIU)

WORK EXPERIENCE

University of Maryland - Research Assistant *January 2019 - Present*

- Working on robust generalization and adversarial examples with Prof. David Jacobs.

- Worked on efficient 2-stage object detection with Prof. Larry Davis.

University of Maryland - Teaching Assistant *August 2019 - December 2019*

- Worked as a Teaching Assistant for the course CMSC-436, Programming Handheld Systems (Android Development using Kotlin).

- Helped organize labs and conduct office hours for a class of over 160 students, with 4 other Teaching Assistants.

Indian Institute of Technology (IIT), Bombay - Research Staff *January 2019 - July 2019*

- Worked on document analysis of engineering drawings (Piping and Instrumentation Diagrams), for automated information retrieval.

- Developed the system for automated symbol detection, text detection and object association in documents for structured parsing and analysis.

American University - Consulting Programmer *January 2019 - August 2019*

- Increased performance of a scientific desktop GUI application by a factor of 1.5x on a single core and implemented efficient multiprocessing code for increased performance on multiple cores.

- Added several new features requested by client and developed application for cross-platform deployment.

Gobasco - AI Engineer *July 2018 - December 2018*

- Built entire object detection and segmentation pipeline using Mask-RCNN for quality assessment of agricultural commodities using various parameters, supporting 5 commodities.

- Evaluated feasibility of deployment on mobile devices, employed various techniques such as distillation, and changing backbone to decrease the model size, inference speed and memory requirements.

- Optimized network for deployment on cloud infrastructure writing custom CUDA layers for models.

INTERNSHIPS

Fortitude Info Services - Software Developer *January 2017 - June 2017*

- Developed a low latency GUI application using Reuters Eikon data feed for correlation and beta value calculation between numerous financial products real time.

- Implemented and back-tested various trading strategies for several derivatives, also developed a system to visualize given trading strategies performance.

PROJECTS

- **Multi-modal Adversarial Robustness** - Explored adversarial robustness of models which use multi-modal input features such as text, audio and video.

- **AI For Earth** - Developed API and deployment of a machine learning model for PM 2.5 prediction using geospatial data of the order of 300 GB's using Azure Web Services.

- **Product Completion Detection** - Deployed fine-tuned MobileNet model on Raspberry Pi to increase efficiency of inventory management and monitor production capacity of job shops.

RELEVANT COURSES

- Graduate Level Courses

  - Machine Learning

  - Computational Linguistics

  - Computer Graphics

  - Advanced Numerical Optimization

  - Foundations of Deep Learning

  - Interactive Technologies in HCI

- Undergraduate Level Courses

  - Deep Learning Specialization

  - Computer Vision

  - Software Development

  - Algorithms and Data Structures

SKILLS

Languages - Python, C++, CUDA, Java, Kotlin, LaTeX
Tech Stack - PyTorch, Tensorflow, OpenCV, MXNet, Cython, Flask, Django, AWS, Azure Cloud Services